

U.S. Antarctic Marine Living Resources Program

2013/2014 Weekly Field Reports

Cape Shirreff, Livingston Island

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Science Report

Seabirds

1. Five weeks have passed since peak hatch for both gentoos and chinstraps. Gentoo chicks from our reproductive study plots completed crèche formation this week, thus concluding the gentoo reproductive success study. This year, 70% of the 50 monitored nests successfully crèched chicks.
2. The peak crèche for chinstrap chicks occurred on 7 February. Currently, 58% of the study nests (N=100) have crèched, while 12% continue to brood chicks. The failure rate among chinstrap nests remained at 30%.
3. We have monitored 42 known-age gentoo penguin nests throughout the season. All active nests have now crèched, concluding our study of gentoo known-age reproductive success. Chicks successfully crèched from 62% of monitored nests. We continue to monitor known-age chinstrap nests. Out of the 39 original nests, 48.7% have crèched, 23.1% continue to brood chicks, and 28.2% have failed. We have also completed banding both gentoo and chinstrap known-aged chicks.
4. We have completed collecting the 21-day weights of penguin chicks from our reproductive success and known-age study nests. The average weight for the older gentoo chick in the nest (assumed to be the larger chick if chick order is unknown) is 1914 g (n = 56) and the average weight for the younger chick is 1585 g (n = 28). The average weight for the older chinstrap chick is 1793 g (n = 97) and 1599 g (n = 49) for the younger chick.
5. We have finished diet sampling gentoo penguins. We collected and analyzed a total of 20 samples. We continue to collect samples of the chinstrap diet, and have currently collected 35 out of the 40 planned samples.
6. This week we deployed four satellite tags and three time-depth records on chinstrap penguins, and one GPS tag on a gentoo to obtain post-crèche data. The satellite transmitters and GPS will be used to determine penguin foraging locations and the time-depth recorders will provide diving behavior profiles. We will recover these instruments after one week of deployment.
7. We continue to monitor 22 active brown skua territories. Currently we have two pairs with two chicks, five with one chick, and 15 pairs have failed. The increase in failure rate this week may have been caused by a summer storm with unusually high winds and snow accumulations that occurred on 8 February.



Pinnipeds

8. Four more CCAMLR attendance study pups have died. This brings the total to 16 of the 30 study females that have lost their pups.
9. Twenty four pups of the twenty six females that completed six trips to sea have been weighed according to protocol. This completes all 6th trip pup weights, as the other two pups were lost to leopard seal predation before a weight could be obtained. Mean mass gain from the start of female foraging cycles to completion of the sixth trip suckling bout was 131.0 g/d (range = 26.5-195.4; s.d. = 34.8).
10. Trip durations have been fairly consistent throughout this season. Twenty six of the thirty attendance study females completed at least six trips to sea before they lost their pups, 17 completed at least ten, and eight females have completed 12. We even have one female that is currently out on her 18th trip.
11. We continue to monitor our adult tagged female population and mother pup pairs to get a measure of reproductive success and loss of pups due to leopard seal predation. Our current estimate for pup loss to leopard seal predation as of 10 February is 54.4%.
12. Systematic surveys of defined areas of the Cape for fur seals tagged as pups continued this week. This will give us a measure of tags sighted per unit of effort for different cohorts and for different areas of the Cape.
13. This week we started collecting our eighth fur seal diet sample of ten scats. To date 72 scats have been collected, and 71 have been processed.
14. This week we recovered two TDRs from adult female fur seals. That brings the total recovered for the year to twelve. These records provide information about foraging and diving behavior. There is one remaining TDR deployed on an adult female.
15. We also recovered one geolocation light sensor (GLS) tag from a juvenile male fur seal. This GLS tag was deployed during the 2011-12 season for an overwinter study and will provide information on winter foraging locations.
16. We have started to place flipper tags on fur seal pups for future demographic studies and cohort success. We have placed thirteen tags on pups of tagged adult females. This coming week we will continue our efforts to tag pups of tagged females and then starting on 19 February we will place the remaining tags on pups in our study area.



17. On 7 February we completed our thirteenth weekly Cape-wide Phocid census. We counted 235 southern elephant seals, 10 Weddell seals, and 11 leopard seals.
18. We completed two more leopard seal captures this week. To date, seven GPS location instruments have been recovered from leopard seals. These instruments together with stable isotope analysis of blood will help us understand leopard seal foraging behavior and quantify their impact on Antarctic fur seals and penguins. To date we have successfully performed fourteen leopard seal captures on seven animals.
19. Leopard seal CRITTERCAM deployments: We have deployed four animal-borne video instruments (developed by National Geographic's Remote Imaging group) on adult female leopard seals. To date we have recovered three.

Weather

20. This week we've seen a series of strong storms out of the east and uncharacteristically cold temperatures. The average temperature fell below freezing at -0.7°C with a high of only 1.3°C and a low of -4.3°C . Winds averaged 14.9 mph with a maximum wind speed of 65 mph. The predominant wind direction was east (65.0%). The storms brought fresh snow with an accumulation of 1.5 feet! Mean daily solar radiation was $6,663\text{ Wm}^2$. As we draw closer to the equinox, the sunrise is now at 5:06 AM (CLST) and sunset is at 9:16 PM (CLST).

Camp

21. The Cape Shirreff population was adjusted again this week. Kyler Abernathy, our collaborator and Director of Research for the National Geographic Crittercam team, was picked up by the National Geographic/Lindblad M/V *Explorer* during the evening of 4 February. It turned out that the ship carried two of our fellow NOAA Fisheries researchers (as well as collaborators of our campmate Trevor Joyce) John Durban and Bob Pittman. They put together a goodie bag for the Cape that included fresh produce, yogurt, cheese, and cured meats. We were very excited and want to send a big THANK YOU to John, Bob, and the crew of the M/V *Explorer*!
22. A new propane stove was installed in the main hut. We discovered the most-amazing collection of debris behind the old stove. The old stove was original to the camp, and served the Cape well from 1997-2014.



23. The team operated swiftly in reducing the impact of a severe snow storm by promptly de-icing decks, gutters, solar panels and door sills regularly.

24. Skis have been cleaned, waxed, and new bindings have been installed in preparation for the 2014-15 season. They have been stored for the overwinter.
25. One benefit of the extreme weather this week was the collection of one barrel of new water.

Presented by Doug Krause and Michelle Goh, with assistance from Kevin Pietrzak, McKenzie Mudge, Trevor Joyce, and David Vejar at the Cape Shirreff Field Camp, Livingston Island, South Shetland Islands, Antarctica

